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FAIRCHILD SEMICONDUCTOR™

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DM74150
Data Selectors/Multiplexers

General Description

These data selectors/multiplexers contain full on-chip decoding to select the desired data source. The DM74150 selects one-of-sixteen data sources. The DM74150 has a strobe input which must be at a LOW logic level to enable these devices. A HIGH level at the strobe forces the W output HIGH and the Y output (as applicable) LOW.

The DM74150 features an inverted (W) output only.

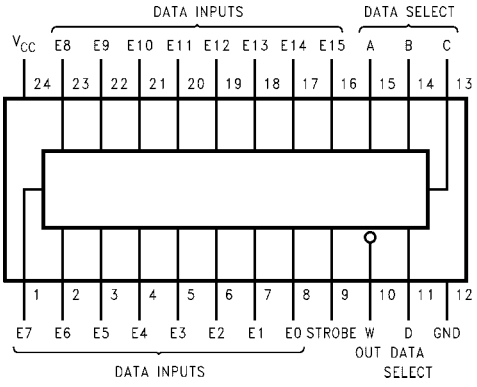
Features

- 150 selects one-of-sixteen data lines
- Performs parallel-to-serial conversion
- Permits multiplexing from N lines to one line
- Also for use as Boolean function generator
- Typical average propagation delay time, data input to W output: 11 ns
- Typical power dissipation: 200 mW

Ordering Code:

Order Number	Package Number	Package Description
DM74150N	N24A	24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-011, 0.600" Wide

Connection Diagram


DATA INPUTS
DATA SELECT
V_{CC} E8 E9 E10 E11 E12 E13 E14 E15 A B C
24 23 22 21 20 19 18 17 16 15 14 13
1 2 3 4 5 6 7 8 9 10 11 12
E7 E6 E5 E4 E3 E2 E1 E0 STROBE W D GND
OUT DATA SELECT
DATA INPUTS

Function Table

Inputs					Outputs
Select				Strobe	W
D	C	B	A	S	
X	X	X	X	H	H
L	L	L	L	L	$\overline{E0}$
L	L	L	H	L	$\overline{E1}$
L	L	H	L	L	$\overline{E2}$
L	L	H	H	L	$\overline{E3}$
L	H	L	L	L	$\overline{E4}$
L	H	L	H	L	$\overline{E5}$
L	H	H	L	L	$\overline{E6}$
L	H	H	H	L	$\overline{E7}$
H	L	L	L	L	$\overline{E8}$
H	L	L	H	L	$\overline{E9}$
H	L	H	L	L	$\overline{E10}$
H	L	H	H	L	$\overline{E11}$
H	H	L	L	L	$\overline{E12}$
H	H	L	H	L	$\overline{E13}$
H	H	H	L	L	$\overline{E14}$
H	H	H	H	L	$\overline{E15}$

H = HIGH Level
L = LOW Level
X = Don't Care
$\overline{E0}$, $\overline{E1}$ …$\overline{E15}$ = the complement of the level of the respective E input

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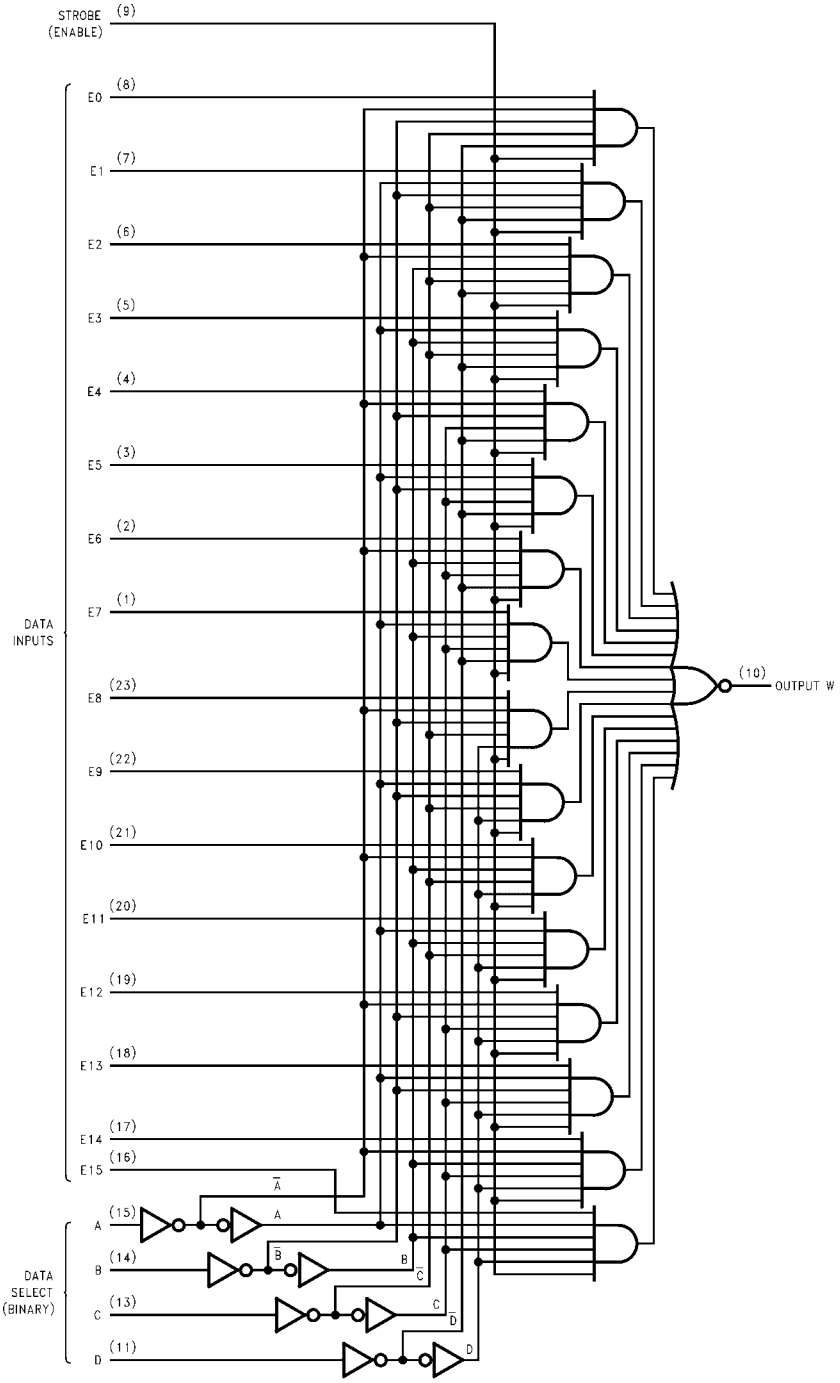
Logic Diagram



Absolute Maximum Ratings(Note 1)

Supply Voltage	7V
Input Voltage	5.5V
Operating Free Air Temperature Range	0°C to +70°C
Storage Temperature Range	−65°C to +150°C

Note 1: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Recommended Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units
V_{CC}	Supply Voltage	4.75	5	5.25	V
V_{IH}	HIGH Level Input Voltage	2			V
V_{IL}	LOW Level Input Voltage			0.8	V
I_{OH}	HIGH Level Output Current			−0.8	mA
I_{OL}	LOW Level Output Current			16	mA
T_A	Free Air Operating Temperature	0		70	°C

Electrical Characteristics

over recommended operating free air temperature range (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 2)	Max	Units
V_I	Input Clamp Voltage	V_{CC} = Min, I_I = −12 mA			−1.5	V
V_{OH}	HIGH Level Output Voltage	V_{CC} = Min, I_{OH} = Max, V_{IL} = Max, V_{IH} = Min	2.4			V
V_{OL}	LOW Level Output Voltage	V_{CC} = Min, I_{OL} = Max, V_{IH} = Min, V_{IL} = Max			0.4	V
I_I	Input Current @ Max Input Voltage	V_{CC} = Max, V_I = 5.5V			1	mA
I_{IH}	HIGH Level Input Current	V_{CC} = Max, V_I = 2.4V			40	μA
I_{IL}	LOW Level Input Current	V_{CC} = Max, V_I = 0.4V			−1.6	mA
I_{OS}	Short Circuit Output Current	V_{CC} = Max (Note 3)	−18		−55	mA
I_{CC}	Supply Current	V_{CC} = Max (Note 4)		40	68	mA

Note 2: All typicals are at V_{CC} = 5V, T_A = 25°C.

Note 3: Not more than one output should be shorted at a time.

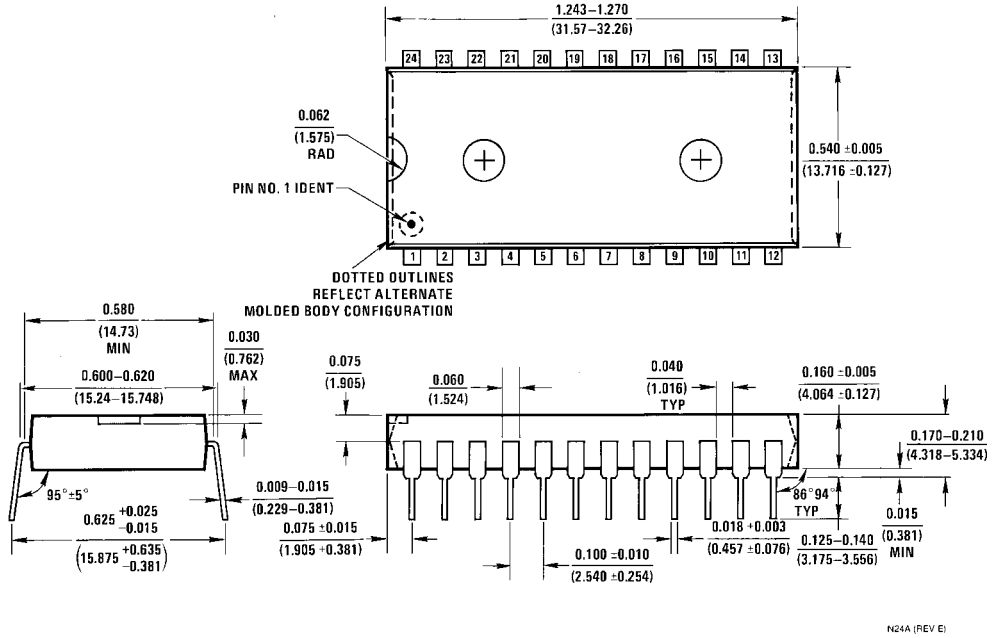
Note 4: I_{CC} is measured with the strobe and data select inputs at 4.5V, all other inputs and outputs OPEN.

Switching Characteristics

at V_{CC} = 5V and T_A = 25°C

Symbol	Parameter	From (Input) To (Output)	R_L = 400Ω, C_L = 15 pF		Units
			Min	Max	
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	Select to W		35	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	Select to W		33	ns
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	Strobe to W		24	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	Strobe to W		30	ns
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	E0-E15 to W		20	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	E0-E15 to W		14	ns

Physical Dimensions inches (millimeters) unless otherwise noted



24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-011, 0.600" Wide
Package Number N24A

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